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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/840,116	04/24/2001	Koh Ishizuka	35.C15325	2648
5514	7590	04/08/2004	EXAMINER	
FITZPATRICK CELLA HARPER & SCINTO 30 ROCKEFELLER PLAZA NEW YORK, NY 10112			WONG, KIN C	
			ART UNIT	PAPER NUMBER
			2651	

DATE MAILED: 04/08/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/840,116

Applicant(s)

ISHIZUKA, KOH

Examiner

K. Wong

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

This is a response to amendment filed on 2/9/04.

Drawings

The drawings were received on 2/9/04. These drawings are approved by examiner.

Claim Objections

Claims are objected to because of the following informalities:

the phrase "close to one other" is not clear in context but examiner has interpreted as "close to one another" as per remarks filed on 2/9/04 on page 20, line 9;

the phrase "optical anisotropy" has no antecedent basis in the specification that which could be considered this phrase as a new matter. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims (1-6 and 8-15) are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishizuka et al (5067813) in view of Best et al (5909333).

Regarding claim 1: Ishizuka et al discloses a displacement detection apparatus (as depicted in figure 3 of Ishizuka et al) including:

a light beam illuminating system that converts a linearly polarized light beam emitted from a light emitting element into a substantially parallel light beam and that

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irradiates a relatively moving object with the light beam through a light beam splitting optical system (as depicted in figures 6-9 of Ishizuka et al), the light beam splitting optical system having an optical anisotropy (col. 4, line 55 to col. 9, line 55 where Ishizuka et al describes the optical anisotropy, additionally, it well that an optical anisotropy is merely that having the properties which is differ from or according to the direction of the measurement) splitting the single parallel light beam emerging from the light beam illuminating system into a plurality of polarized light beams whose polarized states are different from each other (see col. 4, line 55 to col. 6, line 2 of Ishizuka et al);

a focusing optical system for focusing the plurality of split light beams to different positions on a surface of the relatively moving object (see col. 5, line 67 to col. 6, line 2 and col. 7, line 1 to col. 9, line 55 of Ishizuka et al);

a polarizing prism for splitting reflected light beams from the relatively moving object on the basis of a difference between the plurality of directions of polarization (see col. 4, lines 55-62 of Ishizuka et al);

a plurality of light receiving optical systems for individually detecting the different polarized light beams split by said polarizing prism and outputting light receiving signals of the respective light beams (see col. 4, line 63 to col. 5, line 10 of Ishizuka et al); and

a comparator for comparing light receiving signal levels of the respective light beams to detect a relative displacement of the relatively moving object (The comparator is considered inherent because Ishizuka et al describes a determining functions for the differences of the received signal levels which including the comparison function or the comparator.).

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Although Ishizuka et al discloses the displacement detection, Ishizuka et al fails to mention the focusing (detecting) of the different positions at a moving object that is close to one another. Best et al is relied on for detecting of the different positions that is close to one another (see figure 2 and col. 7, line 48 to col. 10, line 64 of Best et al.

It would have been obvious to one of ordinary skill in the art at the time of the invention was made to modify the displacement detection of Ishizuka with close displacement detection as taught by Best et al. the rationale is as follows: one of ordinary skill in the art would have been motivated to provide a close non-coupling precision displaced position detection as suggested in col. 4, lines 48-59 of Best et al.

Regarding claim 2: Ishizuka et al depicts in figure 3 that wherein the light beam splitting optical system has an optical performance capable of splitting the light beam emerging from the light emitting element and, at positions where the light beams are focused by the focusing optical system, spatially separating the focusing positions of the focused light beams

Regarding claim 3: Ishizuka et al teaches that wherein the surface of the relatively moving object is substantially vertically irradiated with the plurality of focused light beams (see col. 4, line 63 to col. 5, line 31 of Ishizuka et al).

Regarding claim 4: Ishizuka et al teaches that wherein a slit-shaped marking or a three-dimensional marking is formed on the surface of the relatively moving object to generate a reflectance difference (in col. 4, lines 39-41 and col. 5, lines 42-46).

Regarding claim 5: Ishizuka et al teaches that wherein the light beam splitting

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optical system has an optical characteristic with which the focusing positions of the plurality of focused light beams are spatially separated at an interval almost equal to a width of the marking (in col. 5, lines 44-46).

Regarding claim 6: Ishizuka et al teaches that wherein the light beam splitting optical system has a parallel plate shape (in col. 4, lines 42-46).

Regarding claim 8: the limitations of wherein the light beam splitting optical system is a crystal optical element are considered inherent because the prism is normally comprising an optical crystal particles, thus, the light beam splitter in element 3 (prism) of Ishizuka et al is a crystal optical element.

Regarding claim 9: Ishizuka et al teaches that wherein a boundary portion is formed on the surface of the relatively moving object to generate a reflectance difference (in col. 5, lines 1-10 and col. 5, line 38 to col. 6, line 2).

Regarding claims 10 and 13: the reason for Ishizuka et al is stated in above. However, Ishizuka et al is silent on the magnetic recording apparatus with the displacement detection apparatus. Best et al is further relied on the combination of magnetic recording apparatus and the displacement detection apparatus (as depicted in figures 1a –5c of Best et al – see associated descriptions for details) in col. 7, line 60 to col. 8, line 6 where Best et al describes the close displaced position detection.

It would have been obvious at the time of the invention was made to combine the displacement detection of Ishizuka et al with the recording apparatus as taught by Best et al. The rationale is as follows: one of ordinary skill in the art would have been

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motivated to provide a precise and an accurate positioning information without mechanical coupling to the actuator as suggested in col. 4, lines 48-59 of Best et al.

Regarding claims 11 and 14: claims (11 and 14) have limitations similar to those treated in the above rejections, and are met by the reference as discussed above.

Claims (11 and 14) however also recite the following limitations of a rotary encoder, which are disclosed in col. 4, lines 34-54 of Ishizuka et al.

Regarding claims 12 and 15: claims (12 and 15) have limitations similar to those treated in the above rejections, and are met by the reference as discussed above.

Claims (12 and 15) however also recite the following limitations of a linear encoder that are disclosed in col. 6, lines 57-63 of Ishizuka et al.

Response to Arguments

Applicant's arguments filed 2/9/04 have been fully considered but they are not fully persuasive.

Regarding remarks (2/9/04) on page 20, lines 3-9: applicant asserts that Ishizuka '813 uses optical encoder for displacement detection where the instant invention does not. In view of claims 11,12, 14 and 15; the noted remarks contradict the noted claims. Thus, Ishizuka '812 is a proper reference with an optical encoder for displacement detection.

Regarding remarks (2/9/04) on page 20, lines 10-15: applicant asserts that Best et al '333 fails to disclose or suggest the close displaced position detection. Applicant is directed to col. 7, line 48 to col. 10, line 64 of Best '333 for the close displaced position detection. Therefore, Best '333 is a proper reference.

Applicant's arguments with respect to claims have been further considered but are moot in view of the new ground(s) of rejection to the newly amended claims.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to K. Wong whose telephone number is (703) 305-7772.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Hudspeth can be reached on (703) 308-4825. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

kw

7 Apr 04



DAVID HUDSPETH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600